



Fig. 1. Frontal view of malformed American Bullfrog showing anophthalmia and missing right external nares.

On 10-11 June 2006, the pond was revisited and searched by three people for a total of 4 h. Survey techniques included hand capture, visual encounter, terrestrial searches around the perimeter of the pond, and intensive dipnetting of the entire pond. All adult animals and tadpoles captured were examined for any anomalies and released. The following species were captured and all individuals appeared to be normal: *Terrapene carolina* (Box Turtle; n = 1), *Eumeces fasciatus* (Five-lined Skink; n = 2), *Rana catesbeiana* (n = 2), *Rana clamitans* (Green Frog; n = 1), *Acris crepitans* (Northern Cricket Frog; n = 1), *Hyla chrysoscelis* (Cope's Gray Treefrog; n = 1) and 150-200 *Rana catesbeiana*, *Rana clamitans*, and other unidentified tadpoles.

The North American Reporting Center for Amphibian Malformation (<http://frogweb.nbio.gov/narcam/index.html>) reports 182 American Bullfrogs with various abnormalities from the United States and Canada. Nine of these reports are for missing eyes but the causes are not described. There are no reports of bullfrogs with missing eyes from Virginia, although anophthalmia has been recorded for Virginia for other species of frogs (Mitchell, 2004). There are no reports of any amphibians with missing nostrils. Meteyer (2000) does not list this malformation for frogs and toads in her field guide to malformations of anurans, suggesting that this must be a rare or underreported malformation.

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Jason D. Gibson
Galileo Magnet High School
Danville, Virginia 24541

Tony Bulmer
Ellanor C. Lawrence Park
Fairfax County Park Authority
5040 Walney Road
Chantilly, Virginia 20151

John White
2815 N. Van Buren Street
Arlington, Virginia 22213

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MESSAGE FROM A PEAT BANK: FIRST RECORD FOR THE EASTERN MUD TURTLE (*KINOSTERNON SUBRUBRUM SUBRUBRUM*) FROM COBB ISLAND, VIRGINIA -- Conant et al. (1990) summarized all known amphibian and reptile species of the Virginia barrier islands based on historical, museum, and personal records. Brannon et al. (2001) added observations on four species of reptiles from Myrtle and Ship Shoal islands and Roble (2001) added the Leatherback Sea Turtle to the list for Hog Island. These islands are geologically dynamic and well known to shift geographic position over time (Dolan et al., 1979; Mitchell & Anderson, 1994). Fresh water occurred on some of the islands historically but only a

few support freshwater ponds today. Islands that had fresh water or water in ponds with low salinity often change over time due to over-wash during storms or development of connections to brackish marshes due to island migration. A case in point is the loss of the freshwater ponds on Hog Island observed by Mathew Brady (1925), possibly as a result of the “Great New England” category 3 hurricane of September 1938 that tracked up the eastern coastline with a storm surge of at least 5.2 m (17 ft) (The Weather Channel, 2006). The Fowler’s Toad (*Bufo fowleri*) population became extirpated on Hog Island, followed shortly thereafter by the Eastern Hog-nosed Snake (*Heterodon platirhinos*) population (Conant et al., 1990). Thus, the number of documented species for each of the Virginia barrier islands (e.g., Conant et al., 1990), is dynamic.

Cobb Island, Northampton County, Virginia, is a xeric dune with dense *Spartina patens* (Salt Hay Grass) brackish marshes on its landward side (McCaffrey & Dueser, 1990). It lies 12.1 km (7.5 mi) east of mainland Eastern Shore. The island is migrating landward at a rate of about 13 cm per year from erosion of the seaward margin and sand movement across the island to the brackish marshes on the western side (Dueser, 1990). The entire island is dynamic with brackish marshes forming and subsequently being lost as the island migrates. Peat layers form beneath the Salt Hay Grass and travel below the island’s surface as sand rolls over it to eventually emerge on the seaward side and subsequently become exposed as old peat banks on the beach (B. Truitt, TNC Virginia Coast Reserve, pers. comm.).

On 18 October 2006, Barry Truitt and Chris Littlefield discovered the intact shell of an Eastern Mud Turtle (*Kinosternon subrubrum subrubrum*) packed with sand and organic debris protruding out of a peat bank on the middle beach on the seaward side of Cobb Island. It is an adult with a 78 mm carapace and 57 mm plastron (Fig. 1; see Mitchell, 1994, for minimum sizes for adults). The presence of a section of old telegraph wire in the same peat bank (B. Truitt, pers. comm.) suggests that the peat layer in which the turtle was found was present early in the 20th century when humans still lived there (Badger & Kellam, 1989; Barnes & Truitt, 1999). This observation places the estimated age of the deposited shell at about 75+ years, given the estimated rate of island migration (B. Truitt, pers. comm.). The turtle may have died and later became entombed in the peat or it was caught in the muck and died there.



Fig. 1. *Kinosternon subrubrum* shell discovered in a peat bank on the beach at Cobb Island, Virginia. Anterior is to the right.

Conant et al. (1990) did not list *Kinosternon subrubrum* for Cobb Island. Loss of the freshwater pools and ponds on this island may have occurred during the same hurricane that destroyed the ponds on Hog Island. Thus, the occurrence of human archaeological evidence, island movement rate, and apparent timing of the loss of fresh water on Cobb Island suggests that Eastern Mud Turtles occurred on the island into the 20th century. Neither fresh water nor *K. subrubrum* were observed on Cobb Island in the 1940s or during later herpetological investigations (Conant et al., 1990). The discovery of the shell in the peat layer on the beach is the first evidence that a population of *K. subrubrum* occurred historically on Cobb Island. This record brings the number of reptiles known for this barrier island to six species. *Kinosternon subrubrum* is now known to have occurred on at least seven of the 16 Virginia barrier islands (Conant et al., 1990; Mitchell, 1994).

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Joseph C. Mitchell
Department of Biology
University of Richmond
Richmond, Virginia 23173